

# Refrigeration, Air Conditioning, and Warm Air Heating Equipment: 2003

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### SUMMARY OF FINDINGS

In 2003, the value of shipments of heat transfer equipment increased by 2 percent to \$4,455 million, compared with the 2002 figure of \$4,369 million. The value of shipments of condensing units, refrigeration (complete), increased by 1 percent to \$303 million, from the 2002 level of \$300 million. Room air-conditioners showed a decrease of 16 percent in 2003 with \$740 million

shipped, compared with the \$882 million shipped in 2002. The value of shipments of motor vehicle mechanical air-conditioning systems decreased by 5 percent to \$2,796 million, compared with the 2002 figure of \$2,947. Compressors and compressor units decreased by 7 percent to \$2,095 million, compared with \$2,243 million in 2002. Automotive air-conditioning compressors showed a decrease of 4 percent in 2003 with \$1,583 million shipped, compared with the \$1,653 million shipped in 2002. Nonelectric warm air furnaces and humidifiers showed a 13-percent increase from \$1,551 million in 2002 to a value of \$1,757 million in 2003. Unitary air-conditioners increased by 7 percent to \$5,409 million, from the 2002 level \$5,047 million. The value of shipments of air source heat pumps increased by 16 percent to \$1,236 million in 2003, compared to the 2002 figure of \$1,065 million. The value of shipments of ground and ground water source heat pumps decreased from \$124 million for 2002 to \$116 million in 2003, showing a 6-percent decrease.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Blynda K. Metcalf, 301-763-4781.

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# U S C E N S U S B U R E A U

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Economics and Statistics Administration  
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Table 1. Summary of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 2003 and 2002  
 [Value in thousands of dollars]

Product code	Product description	2003	2002
3334151	Heat transfer equipment.....	4,455,235	4,369,083
3334153 pt.	Commercial refrigeration equipment.....	178,841	202,704
3334155	Condensing units, refrigeration (complete).....	303,193	299,529
3334156	Room air-conditioners and dehumidifiers.....	739,561	881,856
3363917	Motor vehicle mechanical air-conditioning systems.....	2,796,036	2,946,950
333415A	Compressors and compressor units.....	2,095,152	2,243,167
336391B	Automotive air-conditioning compressors.....	1,583,199	1,652,557
333415C	Nonelectric warm air furnaces and humidifiers.....	1,757,421	1,550,863
333415E	Unitary air-conditioners.....	5,408,764	5,047,267
333415F	Air source heat pumps.....	1,235,625	1,065,155
333415G	Ground and ground water source heat pumps.....	116,334	123,503

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Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 2003 and 2002  
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2003		2002	
			Quantity	Value	Quantity	Value
3334151	Heat transfer equipment (except room and unitary air-conditioners).....	134	(X)	4,455,235	(X)	4,369,083
3334151001	Packaged terminal air-conditioners 1/.....	6		108,164	109,600	r/ 64,385
3334151003	Packaged terminal heat pumps.....	5		86,911	(D)	(D)
	Evaporative condensers.....	(X)		1,941	2,105	51,659
3334151005	100 tons and under.....	9		342	420	4,219
3334151007	Over 100 tons.....	12		1,599	1,685	47,440
	Room fan-coil air-conditioning units:					
3334151009	Vertical stack.....	3	(D)	(D)	(D)	(D)
3334151011	Vertical.....	8		100,906	119,290	92,584
3334151013	Horizontal.....	8	a/	102,387	a/ 123,413	a/ 53,064
3334151015	Room air induction units.....	2	(D)	(D)	(D)	(D)
	Central station air-handling units (motor-driven fan type).....	(X)		373,442	r/ 388,938	743,356
3334151017	Draw through.....	23	c/	353,833	c/ 366,821	593,960
3334151019	Blow through.....	9		6,868	r/ 7,067	107,832
3334151021	Heating and ventilating.....	9	c/	12,741	c/ 34,644	c/ 15,050
	Coolers (refrigeration):					
	Ceiling, wall-mounted, and floor-mounted unit coolers.....	(X)		218,708	139,129	209,397
3334151023	4,000 Btuh and below.....	7		58,929	9,728	50,996
3334151025	4,001 to 6,000 Btuh.....	7		11,287	3,133	12,537
3334151027	6,001 to 8,000 Btuh.....	7		27,231	10,988	24,619
3334151029	8,001 to 12,000 Btuh.....	7		47,058	19,619	47,749
3334151031	12,001 to 18,000 Btuh.....	8		37,066	21,743	36,490
3334151033	Over 18,000 Btuh.....	12		37,137	73,918	37,006
	Air-cooled refrigerant condensers (remote type).....	(X)		24,421	69,764	21,400
3334151035	Under 30 tons.....	11		17,357	17,074	13,791
3334151037	30 to 50 tons.....	9		1,912	7,491	1,989
3334151039	Over 50 tons.....	7		5,152	45,199	5,620
	Miscellaneous heat transfer equipment:					
	Shell-and-tube, shell-and-coil, shell-and-u-tube, tube-in-tube.....	(X)	(X)	51,596	(X)	52,754
3334151041	Condensers.....	6	(X)	26,244	(X)	26,875
3334151043	Liquid coolers.....	9	(X)	25,352	(X)	25,879
3334151045	Liquid-suction heat exchangers and refrigerant liquid receivers.....	6	(X)	2,877	(X)	5,254
	Central system finned coils (air-conditioning and refrigeration type).....	(X)	(X)	73,418	(X)	76,297
3334151047	Standard steam and steam distributing tube.....	11	(X) a/	22,052	(X)	21,341
3334151049	Standard water cooling and/or heating and cleanable tube water.....	12	(X) a/	41,717	(X)	r/ 47,984
3334151051	Volatile refrigerant cooling.....	9	(X)	9,649	(X)	6,972
	Coil sales by original equipment manufacturers intended for resale or assembly into equipment by other manufacturer (all types).....	(X)	(X)	335,442	(X)	292,115
3334151053	Copper and aluminum.....	13	(X)	222,763	(X)	179,998
3334151055	Aluminum (only).....	7	(X)	51,566	(X)	51,114
3334151057	Other, including steel and copper.....	9	(X)	61,113	(X)	61,003
3334151059	Factory-assembled, refrigeration type, finned gravity coils, including wetted-surface dehumidifiers.....	4	(X)	(D)	(X)	(D)
	Centrifugal liquid chilling packages, hermetic and open types.....	(X)		6,451	563,146	6,677
3334151061	200 hp and under.....	10	c/	1,358	34,642	1,545
3334151063	201 to 300 hp.....	7		1,076	61,081	1,142
3334151065	301 to 400 hp.....	6		1,116	75,235	1,062
3334151067	Over 400 hp.....	5		2,901	392,188	2,928
	Ice-making machines.....	(X)		353,200	565,127	360,125
	Self-contained ice-cube makers.....	(X)		204,940	246,215	208,719
3334151069	Automatic, 200 lb and under.....	6		120,007	92,782	121,007
3334151071	Automatic, 201 lb and over.....	7	a/	84,933	153,433	87,712
	Self-contained flake or chip machines.....	(X)		15,283	36,376	14,627
3334151073	300 lb and under.....	5	a/	2,761	a/ 4,188	a/ 2,752
3334151075	Over 300 lb.....	13	b/	12,522	c/ 32,188	c/ 11,875
3334151077	Not self-contained.....	8		72,335	144,257	72,986
3334151079	Combination ice makers and ice/drink dispensers.....	6		60,642	138,279	63,793
3334151081	Absorption refrigeration and dehydration systems.....	5		3,975	44,290	c/ 4,995
3334151083	Mechanical refrigeration systems used on all types of vehicles.....	5	(D)	(D)	(D)	(D)

Continued

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 2003 and 2002  
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2003		2002	
			Quantity	Value	Quantity	Value
	Reciprocating air and reciprocating water cooled, air-cooled screw, air-cooled scroll, and water-cooled scroll machines.....	(X)	30,213	453,938	30,102	485,011
3334151085	20 hp and under.....	23 a/	8,455	35,308	7,704	35,079
3334151087	21 to 49 hp.....	20	6,718	39,486	6,255	r/ 36,172
3334151089	50 to 75 hp.....	19	6,597	75,027	6,820	77,696
3334151091	Over 75 hp.....	18	8,443	304,117	9,323	336,064
3334151093	Factory-fabricated water cooling towers.....	13 a/	8,577 a/	197,279 a/	9,587 a/	207,690
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	5	714,244	178,841	862,406	r/ 202,704
3334155	Condensing units, refrigeration (complete).....	22	477,407	303,193	481,848	299,529
	Air-cooled hermetic-type.....	(X)	467,000	251,651	471,886	249,910
3334155023	1 hp and under.....	13	375,699	132,682	384,594	129,195
3334155025	1.5 hp.....	8	22,103	15,674	20,708	15,962
3334155028	2 and 2.5 hp.....	10	23,394	20,956	24,040	24,096
3334155030	3 hp.....	10	21,188	24,162	19,001	22,568
3334155032	Over 3 hp, but under 15 hp.....	12	24,616	58,177	23,543	58,089
3334155044	Water-cooled hermetic-type, under 15 hp.....	2 (D)	(D)	(D)	(D)	(D)
	Water or air-cooled hermetic-type.....	(X)	6,068	46,457	5,790	42,765
3334155061	15 hp.....	8	1,984	9,240	1,851	8,947
3334155063	20 hp.....	10	955	5,964	973	4,947
3334155065	25 hp.....	8	838	5,711	875	6,326
3334155067	30 hp.....	9	924	8,951	860	8,157
3334155070	40 hp.....	9	1,367	16,591	1,231	14,388
3334155080	Water or air-cooled open-type (all sizes).....	4 a/	144 a/	2,311 r/	207 r/	4,123
3334156	Room air-conditioners and dehumidifiers.....	17	(X)	739,561	(X)	881,856
3334156011	Electrically operated dehumidifiers, mechanically refrigerated, self-contained.....	6	481,933	56,938	r/ 626,145	r/ 76,792
	Room air-conditioners.....	(X)	3,939,441	682,623	3,929,884	805,064
3334156031	5,999 Btuh and under.....	7 (D)	(D)	(D)	(D)	(D)
3334156034	6,000 to 6,999 Btuh.....	6	437,057	46,179	r/ 496,760	r/ 65,291
3334156038	7,000 to 7,999 Btuh.....	7	201,780	33,112	r/ 181,823	r/ 34,643
3334156042	8,000 to 8,999 Btuh.....	5 (D)	(D)	(D)	(D)	(D)
3334156046	9,000 to 9,999 Btuh.....	6	19,674	6,061	r/ 23,496	r/ 8,953
3334156052	10,000 to 10,999 Btuh.....	8	541,398	98,155	r/ 617,630	r/ 134,917
3334156056	11,000 to 12,999 Btuh.....	9	613,580	134,290	r/ 497,933	r/ 129,496
3334156061	13,000 to 14,999 Btuh.....	8 (D)	(D)	(D)	(D)	(D)
3334156063	15,000 to 16,999 Btuh.....	8	138,706	35,543	124,803	r/ 47,382
3334156065	17,000 to 19,999 Btuh.....	8	207,673	59,858	234,857	73,623
3334156067	20,000 to 22,999 Btuh.....	5 (D)	(D)	(D)	a/ 36,055	a/ 10,968
3334156071	23,000 to 25,999 Btuh.....	9	170,419	63,809	r/ 147,013	r/ 56,167
3334156075	26,000 Btuh and over.....	10	30,389	24,298	r/ 38,773	r/ 30,433
3363917	Motor vehicle mechanical air-conditioning systems.....	(X)	(X)	2,796,036	(X)	r/ 2,946,950
3363917010	Air-conditioning units and systems for passenger automobiles 2/.....	22	9,104,738	a/ 1,924,684	7,647,413	r/ 2,116,540
3363917020	Air-conditioning units and systems for buses.....	10	290,029	c/ 203,904	a/ 222,152	a/r/ 173,834
3363917030	Other motor vehicle mechanical air-conditioning systems.....	15	3,583,322	667,448	3,517,357	r/ 656,576
333415A	Compressors and compressor units 3/ 4/.....	24	(X)	2,095,152	(X)	2,243,167
	All refrigerants (except ammonia).....	(X)	11,379,562	2,023,502	13,854,557	2,166,062
	Hermetic-type motor compressors.....	(X)	11,368,917	1,957,246	13,841,169	2,108,767
333415A011	Under 3 hp.....	7	6,882,860	830,171	9,177,246	948,482
333415A023	3 to 10 hp.....	10 (D)	(D)	(D)	r/ 4,589,491	r/ 971,246
333415A030	15 hp.....	10	18,052	19,736	22,834	24,886
333415A032	20 hp.....	10	10,010	18,303	14,051	24,841
333415A034	25 hp.....	10	8,629	16,146	12,824	23,100
333415A036	30 hp.....	10	4,393	13,773	(D)	(D)
333415A039	40 and 50 hp.....	10	15,975	42,738	(D)	(D)
333415A042	60 hp.....	9 (D)	(D)	(D)	(D)	(D)
333415A046	75 hp.....	8 (D)	(D)	(D)	(D)	(D)
333415A049	100 hp and over.....	7 (D)	(D)	(D)	3,135	31,993
333415A052	Open-type compressors (with or without motor--all sizes).....	10 (D)	(D)	(D)	(D)	(D)
333415A054	Screw type.....	4 (D)	(D)	(D)	(D)	(D)
333415A058	Ammonia refrigerants (all types).....	6 a/	1,571	71,650	r/ 1,650	77,105
336391B000	Automotive air-conditioning compressors (open-type, with or without motor).....	9	14,292,443	1,583,199	14,827,988	r/ 1,652,557

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 2003 and 2002  
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2003		2002	
			Quantity	Value	Quantity	Value
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	(X)	(X)	1,757,421	(X)	1,550,863
	Oil, forced air:					
333415C001	150,000 Btuh bonnet output and under.....	14	99,291	73,043	86,290	62,639
333415C005	150,001 Btuh bonnet output and over.....	12	5,129	6,337	r/ 3,823	r/ 5,267
	Gas, forced air:					
333415C007	150,000 Btuh bonnet output and under.....	17	3,238,092	1,463,546	2,928,655	1,272,692
333415C009	150,001 to 400,000 Btuh bonnet output.....	11	11,144	8,863	r/ 10,353	r/ 8,835
333415C011	Over 400,000 Btuh bonnet output.....	9	c/ 287,266	c/ 123,483	c/ 301,398	c/ 129,354
333415C079	All other nonelectric warm air furnaces.....	5	5,999	2,404	(D)	(D)
333415C081	Humidifiers (attachments to warm air furnaces) (all types), including central systems and self-contained (except portable humidifiers).....	14	649,746	a/ 79,745	602,691	a/ 68,990
333415E	Unitary air-conditioners.....	54	(X)	5,408,764	(X)	r/ 5,047,267
333415E005	Recreational vehicle air-conditioners.....	5	(D)	(D)	(D)	(D)
	Single package air-conditioners, with or without evaporator fans, including refrigeration chassis and remote-condenser type.....	(X)	(D)	(D)	(D)	(D)
	Horizontal.....	(X)	214,935	549,465	208,460	577,290
333415E007	Under 27,000 Btuh.....	13	18,709	15,682	18,563	15,300
333415E009	27,000 to 32,999 Btuh.....	11	18,783	17,590	20,953	18,818
333415E011	33,000 to 53,999 Btuh.....	12	67,723	67,295	62,937	63,814
333415E013	54,000 to 64,999 Btuh.....	13	45,388	61,513	39,195	54,488
333415E015	65,000 to 96,999 Btuh.....	10	20,767	45,468	21,096	49,440
333415E017	97,000 to 134,999 Btuh.....	10	16,569	52,471	18,031	59,479
333415E019	135,000 to 184,999 Btuh.....	10	10,420	47,056	10,974	51,961
333415E021	185,000 to 249,999 Btuh.....	11	6,486	47,212	6,793	53,350
333415E023	250,000 to 319,999 Btuh.....	10	5,093	42,768	4,996	41,763
333415E035	320,000 to 379,999 Btuh.....	11	1,215	19,816	1,202	20,972
333415E041	380,000 Btuh and over.....	9	3,782	a/ 132,594	3,720	147,905
	Other than horizontal.....	(X)	(D)	(D)	(D)	(D)
333415E043	Under 54,000 Btuh.....	5	(D)	(D)	(D)	(D)
333415E045	54,000 to 64,999 Btuh.....	4	2,216	5,260	3,427	7,783
333415E047	65,000 to 96,999 Btuh.....	4	331	1,212	412	1,532
333415E049	97,000 to 134,999 Btuh.....	4	(D)	(D)	(D)	(D)
333415E051	135,000 to 184,999 Btuh.....	4	249	2,092	582	4,714
333415E053	185,000 Btuh and over.....	5	(D)	(D)	(D)	(D)
	Year-round air-conditioners, single package and remote-condenser type (except heat pumps).....	(X)	606,932	1,404,796	554,943	1,325,342
333415E055	Under 33,000 Btuh.....	15	134,552	114,474	127,370	111,865
333415E057	33,000 to 38,999 Btuh.....	15	114,632	129,000	104,417	120,846
333415E059	39,000 to 43,999 Btuh.....	11	28,928	30,241	24,775	26,112
333415E061	44,000 to 53,999 Btuh.....	12	76,247	104,321	69,015	95,311
333415E063	54,000 to 64,999 Btuh.....	15	97,310	188,914	86,503	164,579
333415E065	65,000 to 134,999 Btuh.....	8	98,664	306,150	90,459	276,933
333415E067	135,000 to 184,999 Btuh.....	8	28,520	161,341	25,891	148,144
333415E069	185,000 to 249,999 Btuh.....	10	14,873	127,780	13,769	119,818
333415E071	250,000 to 319,999 Btuh.....	8	6,857	66,027	6,337	63,897
333415E073	320,000 to 379,999 Btuh.....	8	2,040	30,461	1,921	30,184
333415E075	380,000 to 539,999 Btuh.....	6	1,746	33,023	1,737	35,694
333415E077	540,000 to 639,999 Btuh.....	6	999	29,569	r/ 965	r/ 26,826
333415E079	640,000 Btuh and over.....	6	1,564	83,495	1,784	105,133
333415E081	Water source heat pumps (except room air-conditioners).....	9	123,974	142,834	r/ 114,336	134,038
	Split system air-conditioning condensing units.....	(X)	4,455,382	2,335,111	4,094,630	2,098,792
333415E082	Under 22,000 Btuh.....	13	295,657	99,009	278,810	99,760
333415E083	22,000 to 26,999 Btuh.....	14	882,186	364,336	839,095	295,030
333415E085	27,000 to 32,999 Btuh.....	15	796,817	331,724	737,428	306,436
333415E087	33,000 to 38,999 Btuh.....	14	983,715	461,989	886,304	415,304
333415E089	39,000 to 43,999 Btuh.....	12	441,063	240,956	391,894	213,914
333415E091	44,000 to 53,999 Btuh.....	13	559,765	345,845	508,115	311,713
333415E093	54,000 to 64,999 Btuh.....	11	434,739	324,517	391,711	284,517
333415E095	65,000 to 96,999 Btuh.....	6	24,160	31,404	23,565	r/ 31,673
333415E097	97,000 to 134,999 Btuh.....	6	16,440	31,593	17,254	33,419
333415E099	135,000 to 184,999 Btuh.....	6	9,584	28,532	9,183	28,514
333415E09A	185,000 to 249,999 Btuh.....	6	5,009	20,719	4,803	20,927
333415E09C	250,000 to 319,999 Btuh.....	4	1,565	8,707	1,757	10,186
333415E09E	320,000 to 379,999 Btuh.....	4	1,527	9,841	1,636	10,982
333415E09G	380,000 to 539,999 Btuh.....	4	1,314	11,213	1,246	10,849
333415E09J	540,000 to 639,999 Btuh.....	4	705	7,638	635	7,380
333415E09L	640,000 Btuh and over.....	3	(D)	(D)	1,194	18,188

Table 2. Quantity and Value of Shipments of Refrigeration, Air-Conditioning, and Warm Air Heating Equipment: 2003 and 2002  
 [Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2003		2002	
			Quantity	Value	Quantity	Value
333415E09M	Split system air-conditioning coils.....	(X)	3,424,938	763,328	3,159,279	689,326
	With blower.....	10	1,767,140	553,818	1,579,736	490,046
333415E09P	Without blower.....	12 a/	1,657,798	209,510	1,579,543	199,280
333415F	Air source heat pumps (except room air-conditioners).....	21 a/	1,577,243	1,235,625	1,363,926	1,065,155
	Single package:					
	Under 27,000 Btuh.....	16	38,070	33,450 r/	31,367 r/	28,013
333415F023	27,000 to 41,999 Btuh.....	15	89,716	99,485	76,775	84,961
333415F034	42,000 to 64,999 Btuh.....	14	77,515	104,421	72,379	95,219
333415F045	65,000 Btuh and over.....	8	15,179	51,508 r/	(D)	(D)
	Split system:					
333415F067	Under 27,000 Btuh.....	12 a/	428,042	212,744 a/	372,457	188,664
333415F078	27,000 to 41,999 Btuh.....	11	608,124	418,449	511,902	344,681
333415F089	42,000 to 64,999 Btuh.....	10	309,505	289,449	275,148	251,143
333415F095	65,000 Btuh and over.....	6	11,092	26,119	10,188	25,283
333415G	Ground and ground water source heat pumps.....	5	61,807 c/	116,334	70,935 r/	123,503
	Single and split systems:					
333415G010	Under 27,000 Btuh.....	3	(D)	(D)	(D)	(D)
333415G020	27,000 to 41,999 Btuh.....	2	(D)	(D)	(D)	(D)
333415G030	42,000 to 64,999 Btuh.....	2	(D)	(D)	(D)	(D)
333415G040	65,000 Btuh and over.....	3	(D)	(D)	(D)	(D)

Btuh British thermal units-per hour. D Withheld to avoid disclosing data for individual companies. pt. Part. r/Revised by 5 percent or more from previously published data. X Not applicable.

1/Defined as factory-selected combinations of heating and cooling components or assemblies intended to serve an individual room and comprising: (1) heating assembly available with element for use with hot water, steam, and electricity; means for forced heated air circulation and distribution; integral or remote temperature controls; (2) slide-in cooling section with complete refrigerant cycle; (3) room cabinet; (4) provision for outdoor air intake and discharge and accessories as required for mounting in a building wall; (5) provisions for air filtration and ventilation; (6) permanent individual branch circuit wiring with a suitable line cord or terminating at a junction box within the room cabinet; and (7) provision for free conditioned air distribution, or when forced circulation is employed for minimal duct work having a total external static resistance not exceeding 1/10 inch of water.

2/Data exclude systems assembled from purchased components and installed at passenger automobile assembly lines. The values are understated for some systems because of the exclusion of compressors.

3/Represents only those compressors and compressor units produced and shipped separately, including interplant transfers.

4/Includes units shipped for household refrigerators.

Note: Percent of estimation for each item is indicated as follows: a/15 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Quantity of Assembled Compressor Bodies: 2003 and 2002  
 [Quantity of number units]

Product description	No. of cos.	2003	2002
Compressor bodies 1/ 2/.....	(X)	15,472,578	17,280,509
All refrigerants (except ammonia).....	(X)	12,248,986	13,575,219
1/4 hp and under.....	3	(D)	(D)
1/3 hp and 1/2 hp.....	4	(D)	(D)
3/4 hp and 1 hp.....	4	(D)	(D)
1-1/2 hp.....	4	(D)	(D)
2 hp.....	6	(D)	(D)
3 hp.....	10	(D)	4,959,627
4 hp.....	3	215,725	264,153
5 hp.....	8	1,049,985	1,114,359
7-1/2 hp.....	11	93,378	90,877
10 hp.....	13	(D)	(D)
15 hp.....	12	134,237	131,268
20 hp.....	10	15,481	20,802
25 hp.....	11	13,258	18,438
30 hp.....	12	23,803	25,552
40 hp.....	11	12,140	15,098
50 hp.....	9	(D)	4,815
60 hp.....	11	4,987	5,137
75 hp.....	11	4,007	(D)
100 hp and over.....	10	21,981	18,804
Automotive air-conditioning, including passenger auto- mobiles, trucks, buses, agriculture and construction equipment.....	3	3,182,270	(D)
Ammonia refrigerants.....	2	(D)	(D)

D Withheld to avoid disclosing data for individual companies.      X Not applicable.

1/Includes units for household refrigerators.

2/Represents the total number of compressor bodies assembled, whether shipped separately or incorporated into a condensing package or unitary end-use product such as single package air-conditioners freezers, and refrigerators (manufactured and remanufactured units).

Table 4. Shipments, Exports, Imports, and Apparent Consumption of Air-Conditioning and Refrigeration Equipment: 2003 and 2002  
 [Value in thousands of dollars]

Product code /1	Product description	Manufactures' shipments (value f.o.b. plant)	Exports of domestic merchandise (value at port) 1/ 2/	Imports for consumption 3/ 4/
<b>2003</b>				
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers.....	4,455,235	214,339	107,812
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	178,841	13,312	91,555
3334155	Condensing units, all refrigerants.....	303,193	36,911	29,785
3334156	Room air-conditioners and dehumidifiers.....	739,561	67,986	1,030,481
3363917	Motor vehicle mechanical air-conditioning systems.....	2,796,036	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants.....	2,095,152	949,870	1,221,650
336391B	Automotive air-conditioning compressors.....	1,583,199	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	1,757,421	(NA)	(NA)
333415E	Unitary air-conditioners.....	5,408,764	253,081	310,522
333415F	Air source heat pumps.....	1,235,625	(NA)	(NA)
333415G	Ground and ground water source heat pumps.....	116,334	(NA)	(NA)
<b>2002</b>				
3334151	Heat transfer equipment, excluding room and unitary air-conditioners and dehumidifiers.....	4,369,083	202,410	88,369
3334153146	Commercial refrigeration equipment, mechanical drinking water coolers.....	202,704	15,010	27,639
3334155	Condensing units, all refrigerants.....	299,529	30,426	28,823
3334156	Room air-conditioners and dehumidifiers.....	881,856	-	-
3363917	Motor vehicle mechanical air-conditioning systems.....	2,946,950	(NA)	(NA)
333415A	Compressors and compressor units, all refrigerants.....	2,243,167	1,048,303	1,188,658
336391B	Automotive air-conditioning compressors.....	1,652,557	(NA)	(NA)
333415C pt.	Nonelectric warm air furnaces and humidifiers.....	1,550,863	(NA)	(NA)
333415E	Unitary air-conditioners.....	5,047,267	50,684	136,686
333415F	Air source heat pumps.....	1,065,155	(NA)	(NA)
333415G	Ground and ground water source heat pumps.....	123,503	(NA)	(NA)

- Represents zero. NA Not available. pt. Partial.

1/Source: Census Bureau report EM 545, U.S. Exports (see Table 5 for a comparison of North American Industry Classification System (NAICS)-based product codes with Schedule B export codes, and HTSUSA import codes.  
 2/Dollar value represents the c.i.f. (cost, insurance, and freight) value at the port of export.  
 3/Source: Census Bureau report IM 145, U.S. Imports for Consumption. Figures include both import value and duty value.  
 4/Represents the c.i.f. (cost, insurance, and freight) value at the first port of entry in the United States plus U.S. import duties.



Table 5. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2003

Product code	Product description	Export code 1/	Import code 2/
3334151	Heat transfer equipment.....	8415.82.0130	8415.82.0130
		8415.82.0135	8415.82.0135
		8415.83.0140	8415.83.0140
		8418.61.0010	8418.61.0010
		8418.61.0015	8418.61.0015
		8418.61.0045	8418.61.0045
		8418.61.0050	8418.61.0050
		8418.61.0060	8418.61.0060
		8418.69.0055	8418.69.0055
3334153146	Mechanical drinking water coolers.....	8418.61.0020	8418.61.0020
3334155	Refrigeration condensing units.....	8418.99.0005	8418.99.8005
		8418.99.0010	8418.99.8010
		8418.99.0015	8418.99.8015
		8418.99.0020	8418.99.8020
		8418.99.0025	8418.99.8025
3334156	Room air-conditioners and dehumidifiers.....	8415.10.3040	8415.10.3040
		8415.10.3060	8415.10.3060
		8415.10.3080	8415.10.3080
		8415.82.0150	8415.82.0155 8415.82.0160
3363917	Motor vehicle mechanical air-conditioning systems 3/.....	(X)	(X)
333415A	Compressors and compressor units, all refrigerants.....	8414.30.4000	8414.30.4000
		8414.30.8010	8414.30.8010
		8414.30.8020	8414.30.8020
		8414.30.8030	8414.30.8030
		8414.30.8050	8414.30.8050
		8414.30.8060	8414.30.8060
		8414.30.8070	8414.30.8070
		8414.30.8080	8414.30.8080
		8414.30.8090	8414.30.8090
336391B	Automotive air-conditioning compressors 3/.....	(X)	(X)
333415C	Nonelectric warm air furnaces and humidifiers 3/.....	(X)	(X)
333415E	Unitary air-conditioners (except room).....	8415.81.0110	8415.81.0110
		8415.81.0120	8415.81.0120
		8415.81.0130	8415.81.0130
		8415.82.0105	8415.82.0105
		8415.82.0110	8415.82.0110
		8415.82.0115	8415.82.0115
		8415.82.0120	8415.82.0120
		8415.83.0050	8415.83.0050
		8415.83.0060	8415.83.0060
333415F	Air source heat pumps 3/.....	(X)	(X)
333415G	Ground and ground water source heat pumps 3/.....	(X)	(X)

X Not applicable

1/Source: 2003 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2003).

3/Import-Export classification not directly comparable.

# Appendix.

## General CIR Survey Information, Explanation of General Terms and Historical Note

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### GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

### NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

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The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

## RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

## DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

## DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

## EXPLANATION OF GENERAL TERMS

**Capacity.** The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

**Consumption.** Materials used in producing or processing a product or otherwise removing the product from the inventory.

**Exports.** Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

**Gross shipments.** The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Interplant transfers.** Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

**Inventories.** The quantity or value of finished goods, work in progress, and materials on hand.

**Machinery in place.** The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

**Net receipts.** Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

**Production.** The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

**Quantities produced and consumed.** Quantities of each type of product produced by a company for internal consumption within that same company.

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**Quantity and value of new orders.** The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

**Quantity and value of shipments.** The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and

returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

**Stocks.** Total quantity of ending finished inventory.

**Unfilled orders (backlog).** Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

#### **HISTORICAL NOTE**

Data on air-conditioning and refrigeration have been collected by the Census Bureau since 1944. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.